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EXAMINER	
MEEK, JACOB M	

ART UNIT	PAPER NUMBER
2637	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/853,682	AZAKAMI ET AL.	
	Examiner	Art Unit	
	Jacob Meek	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 May 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 -36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,12-15,24-27 and 32-36* is/are rejected.

7)☒ Claim(s) *8 -11, 16 - 23, 28 - 31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 May 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The following title is suggested: Automatic gain control for digital demodulation apparatus.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 4 – 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Balaban (US Patent 6,459,458).

With regard to Claim 1, Balaban teaches receive level detection means (see Figure 1, ref 116) for detecting of received level of digital signal (Fig. 1, ref 152), gain adjusting means based on received signal level (See Fig. 1, AGC output to IF and RF Amps).

With regard to Claim 2, Balaban teaches the limitations of Claim 1, plus receive level detection means detects receive level based on amplitude (Fig. 3, ref 202 where ABS is magnitude of signal) of received digital signal.

With regard to Claim 4, Balaban teaches the limitations of Claim 1 plus tuning means for extracting desired digital signal (See Fig. 1, reference 112), AGC means (see Fig.1 ref 114, 116) for amplifying 1st digital modulated signal (Fig 1, ref 112 output) and digitizing means for

converting 2nd digital modulated signal into a 3rd modulated signal (see Fig. 1, ref 130), and tuned signal level detection means for detecting receive level of 1st digital modulated signal based of amplitude of 3rd digital modulated signal (Fig. 1, 116 and Fig 3, 202, 206), and adjusting gain based on 3rd digital modulated signal level (see Fig. 1, 116, AGC, 114).

With regard to Claim 5, Balaban teaches the limitations of Claim 4 plus amplitude detection means for detecting an amplitude value of 3rd digital modulated signal (see Figure 3, 202); average-filtering means for carrying out average-filtering on detected amplitude value with a predetermined averaging coefficient to detect an average amplitude value (see Figure 3, 204, and Column 6, lines 33 – 37 where examiner interprets averaging coefficient to be programmed value of digital low pass filter); error detection means for detecting an error between detected average amplitude value and a desired average value (see Figure 3, 206); and loop filter means for carrying out loop filtering on detected error with a predetermined integral coefficient (see Fig. 3, 214, 218), and generating a stabilization signal for stabilizing an automatic gain control amplification process (see Figure 3, output of 218), and tuned signal receive level variation detection means detects receive level variation based on the generated stabilization signal (see Fig. 1, 116, AGC, 114).

With regard to Claim 6, Balaban teaches the limitations of Claim 5 plus the addition of tuned signal receive level variation detection means comprises difference detection means for detecting a difference between arbitrary two values of stabilization signal (see Figure 4, 220 where examiner interprets this detected value to be the result of AGC (stabilized signal) operation), and receive level variation is detected based on a comparison result obtained by comparing difference with a predetermined threshold (see Figure 4, 206, 208).

With regard to Claim 7, Balaban teaches the limitations of Claim 6 plus the addition of tuned signal receive level variation detection means generates a level variation signal

indicating comparison result (see Figure 4, 206, 208, 220), and gain control means controls gain based on the level variation signal (see Figure 4, 222, 224).

With regard to Claim 12, Balaban teaches the limitations of Claim 6 plus the addition of PWM calculation means for converting stabilization (AGC) signal (examiner notes that this occurs as a result of monitoring of power level controlled by AGC signal) in a square wave signal represented by 0's and 1's (see Figure 3, 210, 212), low-pass-filtering means for extracting low-frequency components from square-wave signal to generate a low-frequency, square-wave Signal (see Figure 3, 214), tuned signal receive level variation detection means detects receive level variation based on low-frequency, square-wave signal (AGC, see Figure 1, 116, 114, AGC, 126).

With regard to Claim 13, Balaban teaches the limitations of Claim 12 plus the addition of gain adjusting means based on low-frequency square wave (see Figure 3, 212, 214, 218 and column 6, line 52 – column 7, line 14).

With regard to Claim 14, Balaban teaches the limitations of Claim 12 plus the addition of tuned signal receive level variation detection means further comprises gain adjusting signal generation means for generating, based on low-frequency, square-wave signal, a gain adjusting signal (see Figure 3, 218 output) for adjusting gain of automatic gain control amplification (See Figure 3, 126) means, and based on gain adjusting signal, tuned signal receive level variation detection (See Figure 3, 202) means detects receive level variation (see Figure 3, 206).

With regard to Claim 15, Balaban teaches the limitations of Claim 14 plus the addition of gain control means controls (see Figure 1, 116) gain based on gain adjusting signal (see Figure 1, AGC).

With regard to claim 24, Balaban teaches the limitations of Claim 2 plus the tuning means for extracting desired digital signal (See Fig. 1, reference 112), AGC means (see Fig.1 ref 114, 116) for amplifying 1st digital modulated signal (Fig 1, ref 112 output) and digitizing means for converting 2nd digital modulated signal into a 3rd modulated signal (see Fig. 1, ref 130), and tuned signal level detection means for detecting receive level of 1st digital modulated signal based of amplitude of 3rd digital modulated signal (Fig. 1, 116 and Fig 3, 202, 206), and adjusting gain based on 3rd digital modulated signal level (see Fig. 1, 116, AGC, 114).. Examiner notes that subtle differences in claim language between this claim and Claim 4 do not alter operation of the circuit.

With regard to claim 25, Balaban teaches the limitations of Claim 12 plus amplitude detection means for detecting an amplitude value of third digital modulated signal (see Figure 3, 202);average-filtering means for carrying out average-filtering on detected amplitude value with a predetermined averaging coefficient to detect an average amplitude value (see Figure 3, 204); error detection means for detecting an error between detected average amplitude value and a desired average value (see Figure 3, 206); and loop filter means for carrying out loop filtering on detected error with a predetermined integral coefficient (see Fig. 3, 214, 218), and generating a stabilization signal for stabilizing an automatic gain control amplification process (see Figure 3, output of 218), and tuned signal receive level variation detection means detects receive level variation based on the generated stabilization signal (see Fig. 1, 116, AGC, 114). . Examiner notes that subtle differences in claim language do not alter operation of the circuit.

With regard to Claim 26, Balaban teaches the limitations of Claim 25 plus tuned signal receive level variation detection means comprises difference detection means for detecting a difference between arbitrary two values of stabilization signal (see Figure 4, 220 where

examiner interprets this detected value to be the result of AGC (stabilized signal) operation), and receive level variation is detected based on a comparison result obtained by comparing difference with a predetermined threshold (see Figure 4, 206, 208).

With regard to Claim 27, Balaban teaches the limitations of Claim 25 plus tuned signal receive level variation detection means generates a level variation signal indicating comparison result (see Figure 4, 206, 208, 220), and gain control means controls gain based on the level variation signal (see Figure 4, 222, 224).

With regard to Claim 32, Balaban teaches the limitations of Claim 26 plus the addition of PWM calculation means for converting stabilization (AGC) signal (examiner notes that this occurs as a result of monitoring of power level controlled by AGC signal) in a square wave signal represented by 0's and 1' (see Figure 3, 210, 212), low-pass-filtering means for extracting low-frequency components from square-wave signal to generate a low-frequency, square-wave Signal (see Figure 3, 214), tuned signal receive level variation detection means detects receive level variation based on low-frequency, square-wave signal (AGC, see Figure 1, 116, 114, AGC, 126).

3. Claims 33 – 36 are rejected under 35 U.S.C. 102(e) as being anticipated by Balaban.

With regard to Claim 33, Balaban teaches the preamble of this claim in Claim 4 above plus the addition of. amplitude detecting means (see Figure 3, ref 202), average filtering means for filtering based on predetermined coefficient (see Fig 3, ref 204 and column 6, lines 33 – 37, digital low pass filter being configurable) , and detecting an average amplitude value (see Figure 3, ref 206 + input); error detection means for detecting an error between detected average amplitude value (see Fig 3, ref 206 +input) and a desired average value (see Figure 3, ref 206 -

input); loop filtering means for carrying out loop filtering (See Fig. 3, ref. 214) on the detected error with a predetermined integral coefficient (see Fig. 3, ref 218), and generating a stabilization signal (see Fig. 3, ref 218 output) for stabilizing an automatic gain control amplification process; receive level variation detection means for detecting receive level variation based on detected stabilization signal (see Fig.3, 126, 130; 202, 204 where examiner interprets this to mean the response of amplifier to applied AGC signal), and average coefficient adjustment means for varying the average coefficient of average-filtering based on detected receive level variation (see column 6, lines 33 – 39 where examiner interprets these digital elements to be programmable by processor).

With regard to claim 34, teaches the limitations of the claimed invention in claim 33 with the exception of the integral coefficient adjusting means. Balaban discloses a means for adjusting integral coefficients of loop filtering (see Figure 4, ref S1, S2, 220, 222, 224, 226 and column 8, line 44 – column 9, line 15).

With regard to claim 35, teaches the limitations of the claimed invention in claim 33 with the exception of loop filtering means for carrying out loop filtering on detected error with a predetermined integral coefficient (AA, AB), and generating a stabilization signal for stabilizing an automatic gain control amplification process. Balaban discloses a means for adjusting integral coefficients of loop filtering (see Figure 4, ref S1, S2, 220, 222, 224, 226 and column 8, line 44 – column 9, line 15) where S1 and S2 are interpreted as equivalent to AA and AB. Examiner notes that receive level claim is written slightly differently than claim 33 but does not believe this materially changes the claim operation.

With regard to claim 36, teaches the limitations of the claimed invention in claim 33 with the exception of averaging coefficient adjusting means for varying the integral coefficient of loop filtering means based on detected receive level variation. Balaban discloses a means for

adjusting integral coefficients of loop filtering (see Figure 4, ref S1, S2, 220, 222, 224, 226 and column 8, line 44 – column 9, line 15). Examiner notes that receive level claim is written slightly differently than claim 33 but does not believe this materially changes the claim operation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Balaban in view of Yoshida et al (US Patent 6,070,062).

With regard to Claim 3, Balaban teaches the limitations of Claim 1. Balaban fails to teach the use of an error signal from demodulated data for signal correction. Yoshida teaches the use of an error detection signal for use in controlling AGC operation (see Figure 2). It would have been obvious to one of ordinary skill in the art at the time of invention was made to utilize this known technique in Balaban to provide an additional degree of control and performance in the AGC circuit.

Allowable Subject Matter

5. Claims 8 – 11, 16- 23, 28 - 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mycynek (US Patent 6,239,848), Marandi (US Patent 6,081,565), Scarpa (US Patent 5,563,916) all disclose AGC circuits which would be operational in the invention disclosed by the inventor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacob Meek whose telephone number is (571)272-3013. The examiner can normally be reached on 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571)272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JMM

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